2.2.8 Energy

2.2.8.1 Regulatory Setting

The CEQA Guidelines, Appendix F, Energy Conservation, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

2.2.8.2 Affected Environment

Southern California has had the benefit of sufficient energy supplies to serve the rapid growth that has taken place over the past 50 years. Much of the energy consumed in the region is for residential, commercial, and transportation purposes. The Southern California Association of Governments (SCAG) tracks and forecasts energy use in the southern California area. The proposed project's region includes the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura (SCAG, 2006). Transportation energy for motor vehicles is primarily provided by direct combustion of petroleum fuels – gasoline and diesel fuel – with smaller contributions from compressed natural gas. Electricity is used in a relatively small number of electric-powered vehicles.

In addition to hydrocarbon energy sources, there are nearly 300 operational power plants located in the counties of Los Angeles, Orange, Riverside, and San Bernardino that each produce at least 100 kilowatt (0.1 megawatt) of electricity (CEC, 2007a). Electric energy in the region is provided primarily through Southern California Edison and the Los Angeles Department of Water and Power distribution networks, along with three municipalities having their own power plants located in the region (i.e., Glendale, Burbank, and Pasadena), and by the Imperial Irrigation District and San Diego Gas & Electric providing service to the extreme southern areas of Riverside and Orange counties, respectively. Because of the current restructuring of the electric energy industry throughout California, many of the facilities owned by investor-owned utilities have been divested. Twenty-three new power generating facilities are planned for the Los Angeles region, and they are currently going through the permitting process (CEC, 2007b).

Most of the electric energy used in southern California is imported to the region from coal-fired and hydroelectric generating facilities located elsewhere in California and out of state. Utilities in southern California participate in power-sharing arrangements with many other entities throughout the western United States. In 2005, the SCAG region consumed almost 128,000 gigawatt-hours (GWh) of electricity, which was approximately 48 percent of the total consumption in the state. Electricity consumption increased 15 percent during the 1990s. Since 2001, electricity consumption has been increasing approximately 1.3 percent per year (SCAG, 2007).

In 2005, the region consumed approximately 8.8 billion gallons of vehicle fuels, which was an increase of more than 20 percent from 1995 (SCAG, 2007). The California Energy Commission (CEC) predicts that the natural gas demand in on-road vehicles will increase from 75 million therms in 2003 to 200 million therms in 2025. Transportation electricity will grow from 600 million kilowatt-hours (kWh) in 2003 to 1,800 kWh in 2025 (CEC, 2007c).

Forecasts by CEC indicate that vehicle miles traveled (VMT) for all vehicles (i.e., light-duty, heavy-duty, and transit) in California will increase by an average of 1.75 percent per year between 2000 and 2020 (CEC, 2007c). The related increase in gasoline consumption results from a combination of forecast increases in population and VMT, and lower than previously expected sales of natural gas-fueled vehicles and insufficient sales of electric vehicles sufficient to meet California Air Resources Board (CARB) zero emission vehicle fleet penetration mandates.

The CEC base-case forecast projects statewide on-road gasoline demand to increase by 0.1 percent per year from 2005 to 2025. Diesel demand is expected to grow by an average of 2.7 percent per year from 2005 to 2025 (CEC, 2007c). The base case includes a substantial increase in full-hybrid vehicles. CEC projects average gasoline fuel efficiencies for light-duty motor vehicles in 2030 of 20.7 miles per gallon (mpg) and diesel fuel efficiency of 5.07 mpg for trucks (CEC, 2002).

2.2.8.3 Environmental Consequences

A Temporary Impacts

Construction equipment and construction worker vehicles operated during project demolition and construction would use fossil fuels. This increased fuel consumption would be temporary and would cease at the end of the construction activity, and it would not have a residual requirement for additional energy input. The marginal increases in fossil fuel use resulting from project construction are not expected to have appreciable impacts on energy resources.

B Permanent Impacts

No Build Alternative. With the No Build Alternative, the I-5/Ortega Highway interchange would remain in its existing condition without improvements. Based on the traffic analysis conducted for this project (Parsons, 2006), the average daily traffic (ADT) and VMT at the I-5/Ortega Highway interchange for 2006 and 2030 under the No Build Alternative are shown in Table 2.2.8-1.

To determine the current (2006) fuel consumption the 2006 VMT is divided by the current average gasoline and diesel fuel efficiencies (20.6 mpg and 5.07 mpg, respectively) which yields a daily 2006 gasoline use estimate of approximately 19,454.4 gallons (73,642.92 liters) and a diesel fuel use estimate of approximately 11688.4 gallons (44,245.41 liters). Determining the future (2030) fuel consumption under the No Build scenario would require the estimation of 2030 fuel efficiencies for both gasoline and diesel vehicles. It is assumed that fuel efficiency would improve with greater use hybrid vehicles and advances in alternative fuel technology. This forecast in future fuel efficiency is difficult to accurately predict so this analysis will consider the “worst case scenario,” which utilizes the current fuel efficiencies, which assumes there is no improvement in alternative fuel technology or increase in alternative fuel technology use.

Under these "worst case assumptions" the 2030 estimated daily gasoline use under the No Build Alternative would be approximately 21,773.8 gallons (82,422.8 liters) and the estimated daily 2030 diesel use would be 16,067.1 gallons (60,820.59 liters).

Table 2.2.8-1
Existing and Future (2030) Forecast ADT and VMT – No Build Alternative

	Automobiles	**Trucks[3]**
2006 ADT	40,075	5,925
2006 Round Trips[1]	20,038	2,963
2006 VMT[2]	400,760	59,260
2030 ADT	44,854	8,146
2030 Round Trips[1]	22,427	4,073
2030 VMT[2]	448,540	81,460

[1] Assumes that one-half of the total ADT represents round trips.
[2] Assumes 20 miles round trip per automobile and truck.
[3] ADT and VMT assuming 2+ axle trucks make up 12.88% of total traffic for current year (2006) and 15.37% for the forecasted year (2030).

Source: Parsons, 2007.

Alternatives 3 and 5. Both build Alternatives 3 and 5 would have the similar impacts. Based on the traffic analysis conducted for this project (Parsons, 2007), the ADT and VMT at the I-5/Ortega Highway interchange for 2006 and 2030 under the build alternatives are shown in Table 2.2.8-2. Dividing 2006 VMT by the current average gasoline and diesel fuel efficiencies (20.6 mpg and 5.07 mpg, respectively) yields a daily 2006 gasoline use estimate of approximately 19,454.4 gallons (73,642.92 liters) and a diesel fuel use estimate of approximately 11688.4 gallons (44,245.41 liters). Using 2030 Alternatives 3 and 5 VMT forecasts and future fuel efficiencies provides an estimate of daily 2030 gasoline use of approximately 21,773.8 gallons (82,422.8 liters) and a forecast 2030 diesel use of approximately 16,067.1 gallons (60,820.59 liters). Since this is a no-growth project, there is no increase in traffic associated with this project; therefore, the only increase in energy use would be limited to the energy use during construction. This relatively small increase in energy use would not result in the loss of availability of a known mineral resource that would be of future value to the region and residents of the state. When balancing energy used during operation against energy saved by relieving congestion and other transportation efficiencies, the project would not have substantial energy impacts.

Table 2.2.8-2
Existing and Future (2030) Forecast ADT and VMT – Build Alternatives

	Automobiles	Trucks[3]
2006 ADT	40,075	5,925
2006 Round Trips[1]	20,038	2,963
2006 VMT[2]	400,760	59,260
2030 ADT	44,854	8,146
2030 Round Trips[1]	22,427	4,073
2030 VMT[2]	448,540	81,460

[1] Assumes that one-half of the total ADT represents round trips.
[2] Assumes 20 miles round trip per automobile and truck.
[3] ADT and VMT assuming 2+ axle trucks make up up 12.88% of total traffic for current year (2006) and 15.37% for the forecasted year (2030)..

Source: Parsons, 2007.

2.2.8.4 Avoidance, Minimization, and/or Mitigation Measures

A Temporary Measures

No temporary measures are required.

B Permanent Measures

No permanent measures are required.